

Annex to ‘Fertile Soil for Structural Funds?’

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In this Annex, we present some further robustness tests on the analyses presented in the paper. In particular, we show the results that are obtained when including institutional quality in levels in the benchmark specification (in addition to institutional quality being interacted with structural funds). The Tables are to be compared with Tables 1, 2, 3, 5, C1 and C2 in the main text. The results essentially reveal that institutional quality is statistically insignificant in most of the cases and that its inclusion has limited effects on the other estimated coefficients.

Table 1a extends Table 1 in the main text by adding institutional quality in levels to the last two specifications in Table 1.

Table 1a
The conditional effectiveness of Structural Funds: main result
(OLS, dependent variable: growth of GDP per capita)

	Basic with SF and institutional quality	SF, Institutional Quality and interaction effect
Log of initial GDP per capita	-0.031 ^{***} (0.006)	-0.029 ^{***} (0.005)
Log of investment rate	0.019 ^{**} (0.009)	0.020 ^{**} (0.009)
Log of human capital	0.014 (0.013)	0.017 (0.013)
Log of (population growth + 0.05)	-0.027 (0.020)	-0.024 (0.020)
Structural Funds	-0.004 (0.014)	-0.109 ^{**} (0.049)
Structural Funds * Institutional Quality		0.014 [*] (0.007)
Institutional Quality	0.004 ^{**} (0.002)	0.002 (0.002)
Constant	0.202 ^{***} (0.055)	0.212 ^{***} (0.057)
Adjusted R ²	0.49	0.51
Joint significance test SF variables		11.30 ^{***}
# panel observations	91	91

Notes: White heteroskedasticity-consistent standard errors are reported in parentheses. ^{***}, ^{**}, and ^{*} denote significance at 1, 5 and 10 per cent levels, respectively. The test for the joint significance of the Structural Funds variables is a Wald test, testing the null-hypothesis that the coefficients for the Structural Funds variables (in levels and interacted with institutional quality) are equal to zero. See Appendix B in the paper for details about the variables and their sources.

Table 2a corresponds to Table 2 in the main text, with the only difference that the conditioning variable has been included in levels in all estimated equations in Table 2a.

Table 2a

Different measures for institutional quality (OLS, dependent variable: growth of GDP per capita)

	Institutional conditioning variable			
	Inflation	Trust ^a	Openness	Corruption
Log of initial GDP per capita	-0.028 ^{***} (0.005)	-0.024 ^{***} (0.005)	-0.025 ^{***} (0.005)	-0.027 ^{***} (0.005)
Log of investment rate	0.022 ^{**} (0.009)	0.024 ^{**} (0.010)	0.018 ^{**} (0.009)	0.020 ^{**} (0.009)
Log of human capital	0.006 (0.012)	0.017 (0.013)	0.020 (0.013)	0.021 (0.014)
Log of (population growth + 0.05)	-0.045 ^{**} (0.019)	-0.025 (0.020)	-0.038 ^{**} (0.018)	-0.028 (0.020)
Structural Funds	-0.171 [*] (0.093)	-0.048 (0.036)	-0.336 ^{***} (0.081)	-0.117 ^{***} (0.037)
SF * Conditioning variable (see column header)	0.106 [*] (0.063)	0.002 (0.001)	0.077 ^{***} (0.020)	0.017 ^{**} (0.007)
Conditioning variable (see column header)	0.016 ^{***} (0.005)	-0.00001 (0.0001)	-0.007 (0.004)	-0.0004 (0.001)
Constant	0.155 ^{***} (0.053)	0.187 ^{***} (0.057)	0.165 ^{***} (0.050)	0.194 ^{***} (0.057)
Adjusted R ²	0.53	0.43	0.54	0.50
Joint significance test SF variables	9.03 ^{***}	0.69	10.50 ^{***}	7.43 ^{***}
# panel observations	91	84	91	91

Notes: White heteroskedasticity-consistent standard errors are reported in parentheses. ***, ** and * denote significance at 1, 5 and 10 per cent levels, respectively. The test for the joint significance of the Structural Funds variables is a Wald test, testing the null-hypothesis that the coefficients for the Structural Funds variables (in levels and interacted with institutional quality) are equal to zero. See Appendix B in the paper for details about the variables and their sources.

^a The 'trust-variable' is not available for Greece.

Tables 3a and 4a report the implied semi-elasticities, based on the regression equations as reported in Table 1a and Table 2a (viz. including the conditioning variable in levels in the estimated regression models).

Table 3a
Implied semi-elasticities for three specifications for EU-15

SF and institutional quality		SF and corruption		SF and openness	
Greece	-1.15	Greece	-1.64	Italy	-3.11
Spain	-0.11	Italy	-1.51	France	-3.02
Portugal	-0.03	Belgium	-0.36	Germany	-2.67
Ireland	0.32	Portugal	-0.34	Spain	-2.43
Italy	0.34	France	-0.25	United Kingdom	-2.21
France	1.39	Spain	0.07	Finland	-1.89
United Kingdom	1.46	Ireland	0.44	Greece	-1.66
Austria	1.57	Germany	0.56	Sweden	-1.40
Germany	1.70	Austria	1.03	Denmark	-0.86
Sweden	1.76	United Kingdom	1.60	Portugal	-0.35
Finland	1.78	Luxembourg	2.00	Austria	-0.09
Denmark	1.81	The Netherlands	2.20	The Netherlands	1.30
Belgium	1.82	Sweden	2.42	Ireland	1.37
The Netherlands	1.94	Denmark	3.02	Belgium	2.59
Luxembourg	2.03	Finland	3.43	Luxembourg	4.60

Table 4a
Implied semi-elasticities for accession countries

SF and institutional quality		SF and corruption		SF and openness	
Malta	-2.84	Romania	-4.81	Turkey	-4.54
Turkey	-2.45	Latvia	-4.10	Poland	-2.96
Cyprus	-1.76	Turkey	-3.87	Romania	-2.43
		Slovak Republic	-3.75	Hungary	-1.18
		Bulgaria	-3.51	Bulgaria	0.45
		Czech Republic	-3.51	Lithuania	1.25
		Poland	-3.28	Czech Republic	1.37
		Lithuania	-2.45	Cyprus	1.43
		Slovenia	-1.98	Latvia	1.60
		Hungary	-1.86	Slovak Republic	1.86
		Estonia	-1.51	Slovenia	2.57
				Estonia	3.22
				Malta	4.79

Table 5a
 Robustness of results with effectiveness of Structural Funds conditional on institutional quality
 (Different panel data techniques, samples and specifications. Dependent variable: growth of GDP per capita)

	Basic	Institut. Quality as such	SF one period lagged	Excluding Ireland	With EU dummy	Period Specific Fixed Effects	Period 1975–1995	With PWT data ^a	Blundell Bond ^a
Log of Initial GDP per capita	−0.028*** (0.005)	−0.029*** (0.005)	−0.030*** (0.006)	−0.034*** (0.006)	−0.031*** (0.005)	−0.008 (0.006)	−0.024** (0.011)	−0.032*** (0.006)	−0.069*** (0.016)
Log of investment rate	0.020** (0.009)	0.020** (0.009)	0.019** (0.009)	0.022** (0.009)	0.023** (0.009)	0.010 (0.010)	0.013 (0.012)	0.029*** (0.007)	0.006 (0.016)
Log of human capital	0.022* (0.012)	0.017 (0.013)	0.020 (0.014)	0.023 (0.014)	0.020 (0.013)	0.003 (0.010)	0.036** (0.017)	−0.001 (0.014)	0.101** (0.040)
Log of (pop. growth + 0.05)	−0.024 (0.020)	−0.024 (0.020)	−0.036* (0.020)	−0.019 (0.019)	−0.027 (0.021)	−0.031** (0.016)	−0.055* (0.029)	−0.036* (0.021)	−0.046* (0.027)
Structural Funds	−0.141*** (0.043)	−0.109** (0.049)	−0.109** (0.052)	−0.076** (0.038)	−0.111** (0.052)	−0.165*** (0.054)	−0.138*** (0.051)	−0.164*** (0.059)	−0.139* (0.078)
Structural Funds * Institutional Quality	0.018** (0.007)	0.014* (0.007)	0.014* (0.008)	0.008 (0.006)	0.013* (0.008)	0.023*** (0.008)	0.019** (0.008)	0.022*** (0.008)	0.017* (0.010)
Institutional Quality itself		0.002 (0.002)	0.002 (0.002)	0.003* (0.001)	0.002 (0.002)	−0.003 (0.002)	−0.001 (0.003)	0.000 (0.002)	
EU dummy					0.004 (0.003)				
Constant	0.208*** (0.058)	0.212*** (0.057)	0.168*** (0.059)	0.253*** (0.060)	0.216*** (0.057)		0.047 (0.090)	0.265*** (0.064)	
Adjusted R ²	0.51	0.51	0.43	0.58	0.51	0.68	0.26	0.44	
Joint sign. test SF-variables	11.91***	3.38**	2.76*	4.12**	4.07**	4.78***	3.91**	3.83**	
# panel observations	91	91	78	84	91	91	52	91	91

Note: White heteroskedasticity-consistent standard errors are reported in parentheses. ***, **, and * denote significance at 1, 5 and 10 per cent levels, respectively. The test for the joint significance of the Structural Funds variables is a Wald test, testing the null-hypothesis that the coefficients for the Structural Funds variables (in levels and interacted with institutional quality) are equal to zero. See Appendix B in the paper for details about the variables and their sources.

^a The results of the last specification are based on a regression equation with the natural logarithm of GDP per capita as dependent variable and are subsequently transformed for reasons of comparability with the other equations (using the fact that the growth rate in all specifications in this paper is defined as the dlog divided by five). We report the two-step GMM estimates. Instruments used in the Blundell-Bond approach are the log of initial income two periods lagged, and the dlog of initial income one period lagged. All other right-hand-side variables are assumed to be exogenous and are instrumented with their own value. The Sargan test does not reject the null-hypothesis of a valid specification. As compared to Table 5 in the main text, we have no fixed-effects estimates and no Arrelano-Bond estimates due to the absence of variation of institutional quality over time. Further details are available upon request.

Table C1a

Different measures for institutional quality (OLS, dependent variable: growth of GDP per capita)

	Central Government Savings	World Bank Governance Indicator 'Political Stability'	World Bank Governance Indicator 'Government Effectiveness'	World Bank Governance Indicator 'Rule of Law'
Log of initial GDP per capita	-0.029*** (0.005)	-0.029*** (0.005)	-0.026*** (0.005)	-0.025*** (0.005)
Log of investment rate	0.018* (0.010)	0.018* (0.009)	0.021** (0.009)	0.022** (0.009)
Log of human capital	0.024* (0.013)	0.027** (0.013)	0.020 (0.014)	0.016 (0.015)
Log of (population growth + 0.05)	-0.027 (0.021)	-0.025 (0.021)	-0.032 (0.020)	-0.034* (0.020)
Structural Funds	0.007 (0.029)	-0.105*** (0.032)	-0.070*** (0.021)	-0.079*** (0.024)
Structural Funds * Conditioning variable (see column header)	0.007 (0.008)	0.078** (0.034)	0.049** (0.022)	0.063** (0.027)
Conditioning variable (see column header)	0.000 (0.001)	-0.007 (0.005)	-0.003 (0.005)	-0.000 (0.005)
Constant	0.204*** (0.058)	0.211*** (0.058)	0.179*** (0.057)	0.169*** (0.055)
Adjusted R ²	0.45	0.49	0.50	0.51
Joint significance test SF variables	0.94	7.02***	8.46***	9.19***
# panel observations	91	91	91	91

Note: White heteroskedasticity-consistent standard errors are reported in parentheses. ***, **, and * denote significance at 1, 5 and 10 per cent levels, respectively. The test for the joint significance of the Structural Funds variables is a Wald test, testing the null-hypothesis that the coefficients for the Structural Funds variables (in levels and interacted with institutional quality) are equal to zero. See Appendix B in the paper for details about the variables and their sources.

Table C2a
 Robustness of results with effectiveness of Structural Funds conditional on openness
 (Different panel data techniques, samples and specifications. Dependent variable: growth of GDP per capita)

	Basic	Including Openness separately	SF one period lagged	Excluding Ireland	With EU dummy	Country Fixed Effects	Period Fixed Effects	Period 1975– 1995	With PWT data	Arellano Bond	Blundell Bond
Log of initial GDP per capita	-0.025*** (0.005)	-0.025*** (0.005)	-0.024*** (0.005)	-0.030*** (0.005)	-0.027*** (0.005)	-0.053*** (0.012)	-0.010* (0.005)	-0.020** (0.009)	-0.027*** (0.006)	-0.065** (0.032)	-0.062*** (0.017)
Log of investment rate	0.020** (0.009)	0.018** (0.009)	0.018** (0.009)	0.019** (0.009)	0.023** (0.009)	0.008 (0.012)	0.014 (0.010)	0.013 (0.011)	0.024*** (0.007)	0.005 (0.025)	0.004 (0.016)
Log of human capital	0.014 (0.012)	0.020 (0.013)	0.019 (0.014)	0.027** (0.013)	0.023* (0.012)	0.066* (0.037)	-0.002 (0.010)	0.022 (0.016)	-0.002 (0.012)	0.092 (0.063)	0.098** (0.037)
Log of (population growth + 0.05)	-0.034* (0.019)	-0.038** (0.018)	-0.052*** (0.018)	-0.026 (0.018)	-0.044** (0.017)	-0.052*** (0.019)	-0.042*** (0.014)	-0.069** (0.027)	-0.049** (0.020)	-0.054*** (0.018)	-0.065* (0.036)
Structural Funds	-0.285*** (0.082)	-0.336*** (0.081)	-0.337*** (0.085)	-0.318** (0.121)	-0.359*** (0.090)	-0.402*** (0.073)	-0.310*** (0.077)	-0.270*** (0.074)	-0.333*** (0.086)	-0.345 (0.235)	-0.329 (0.241)
Structural Funds * Openness	0.064*** (0.021)	0.077*** (0.020)	0.077*** (0.021)	0.073** (0.031)	0.081*** (0.022)	0.099*** (0.018)	0.074*** (0.019)	0.064*** (0.019)	0.078*** (0.020)	0.085 (0.055)	0.076 (0.057)
Openness itself		-0.007 (0.004)	-0.004 (0.004)	-0.004 (0.004)	-0.008** (0.004)	-0.015 (0.012)	-0.003 (0.003)	-0.002 (0.006)	-0.006 (0.004)	-0.019 (0.208)	-0.013 (0.016)
EU dummy					0.006** (0.003)						
Constant	0.165*** (0.053)	0.165*** (0.050)	0.109** (0.051)	0.223*** (0.055)	0.174*** (0.047)			-0.004 (0.079)	0.205*** (0.066)		
Adjusted R ²	0.53	0.54	0.47	0.57	0.56	0.67	0.70	0.30	0.45		
Joint significance test SF variables	13.94***	15.52***	12.86***	15.22***	16.02***	15.33***	8.18***	8.57***	7.50***		
# panel observations	91	91	78	84	91	91	91	52	91	78	91

See Table 5a for notes